Greek and Latin in Scientific Terminology, Lecture 4

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# Last Time

## Inflected Languages

* Examined basic concepts of inflected languages: background information to help you avoid embarrassing mistakes and make better use of dictionaries (important for the final assignment).
* You need to understand for the purposes of the test:
  + that, due to the processes of inflection, slightly different forms of stems can refer to the same original word;
  + that the endings of words can dramatically change their meaning.
* Introduced Greek noun-forming suffixes.
* Read Džuganová (2013), who explains how terminology has been created in the past, and how it tends to be created today; Marečková et al. (2002), who analyse the current role of Latin in medicine.

# Test One

## What do you need to know?

* Learn the prefixes, roots, and suffixes from the first five lectures, all found in the online vocabulary list.
  + If you want additional examples of terminology using these stems, you can look at Ayers, lessons 1–18.
* You are responsible for knowing the meaning of terms on the list that can be composed of the elements you have learned; questions on these, however, will be multiple choice, *vel sim.* (or something similar).
* No terms will appear on your test of which you have not learned all the constituent elements in the lessons covered so far.
* There will be a handful of questions in which you will be asked to transliterate Greek words into Latin characters. They will be words with very close English equivalents, as we have been looking at in class; if you want something to practice on, I have provided a list on the Learning Portal.
* There will be a few other questions (multiple choice) drawn from the readings for the class.
* Your main focus in studying should be on the vocabulary.
* The test will be one hour in length.
* There will be a short lesson beforehand. Material introduced in this lesson will not appear on the test.
* We will have a short practice quiz (non-credit) on Tuesday.

## Sample Questions

* Give at least one English translation for each of the following Greek bases:

1. ANTHROP-
2. MELAN-
3. HELIC-, HELIX

* Give at least one English translation for each of the following Greek bases:

1. ANTHROP-
   * human being
2. MELAN-
   * black
3. HELIC-, HELIX
   * spiral

## Hydrotropism

* Choose one:
  1. absence of the sense of smell
  2. response to stimulus of water
  3. inflammation of the urinary bladder

## Hydrotropism

* Answer: B
  1. absence of the sense of smell
  2. **response to stimulus of water**
  3. inflammation of the urinary bladder
* HYDRO-, ‘water’ + TROP-, ‘turn’ + -ism, ‘condition of’

# Greek Diminutive Suffixes

## What is a diminutive suffix?

* Diminutive suffixes are normal noun-forming suffixes.
* Every diminutive suffix gives the meaning ‘little’. That’s why they’re called ‘diminutive’!
* In English, examples include:
  + cat → kitten
  + bull → bullock
  + small → smallish
  + kitchen → kitchenette
  + pig → piglet

## -ium, -ion

* ‘little’
* BACTER-ium, ‘little rod’ (*bacteria* is plural)
* POD-ium, ‘little foot’ (tube foot of echinoderm)
* THEC-ium, ‘little case’ (the spore-bearing layer in fungi’)
* STOM-ion, ‘little mouth’ (the midpoint of the oral fissure determined with the lips closed)

## -idium, -idion

* ‘little’
* CONI, ‘dust’ + -idium = conidium, a spore produced asexually by various fungi
* BAS-, ‘base’ + -idium = basidium, a microscopic club-shaped spore-bearing structure produced by certain fungi
* PLAST-, ‘to mould’ + -idion = plastidion, any of various small bodies of specialized protoplasm lying in the cytoplasm of cells

## -arium, -arion

* ‘little’
* CON-, ‘cone’ + -arium = conarium, pineal body
* HIPP-, ‘horse’ + -arion = Hipparion, a genus of extinct three-toed mammals related to horses

## -isk, -iscus

* ‘little’
* ASTER-, ‘star’ + -isk = asterisk
* LEMN-, ‘ribbon’ + -iscus = lemniscus, a secondary sensory pathway of the central nervous system
* MEN-, ‘moon’ + -iscus = meniscus, a crescent or crescentic body

# Bases, Part I

## ASC-

* ‘bag’
* ASC-us (pl. asci), a sac, typically cylindrical in shape, in which the spores of ascomycete fungi develop; ASCO-GEN-ous, producing asci; ASCO-MYCETE, a fungus whose spores develop within asci

## BRANCHI-

* ‘gills’
* BRANCHI-a, the gills of fish and some invertebrate animals; meta-BRANCHI-al, pertaining to or in the posterior gill region; PHYLLO-BRANCHI-a a gill consisting of numbers of lamellae or thin plates

## CARP-

* ‘fruit’
* ACTINO-CARP-ous, of plants with flowers and fruit radially arranged; ANGIO-CARP-ic, having or being fruit enclosed within an external covering, opposite of GYMNO-CARP-ic

## -CELE

* ‘hernia’, ‘swelling’
* ENTERO-CELE, hernia containing a loop of intestine; HYDRO-MYELO-CELE, excessive accumulation of a fluid in the central canal of the spinal cord; GALACTO-CELE, a cystic tumour in the ducts of the breast

## COLP-

* ‘vagina’, ‘womb’
* COLPO-SCOPE, a surgical instrument used to examine the vagina and the cervix of the womb; PYO-COLPO-CELE, a suppurating cyst of the vagina

## GEN(E), GON-

* ‘to be produced’, ‘to produce’; ‘seed’
* GENE-sis; eu-GEN-ics (i.e. ‘producing well’); COCCO-GONE, a reproductive cell in certain algae; GON-ad, an organ that produces gametes; a testis or ovary

## HELI-

* ‘sun’
* HELIO-CENTR-ic; HELI-um; HELIO-TAX-is, locomotor or other response to stimulus of sunlight; HELIO-LITH-ic, marked by sun worship and erection of megaliths

## MER-

* ‘part’
* MER-ONYM, a term which denotes part of something but which is used to refer to the whole of it; ADENO-MERE, that portion of a developing gland which will be responsible for its functioning; dys-MERO-GENE-sis, segmentation resulting in unlike parts

## NYCT-

* ‘night’
* NYCTI-TROP-ism, tendency of certain leaves to curl upward at night; NYCT-ALOP-ia, a condition characterized by an abnormal inability to see in dim light or at night; NYCTO-phobia, extreme or irrational fear of the night or of darkness

## ONYM-

* ‘name’
* an-ONYM-ous; PSEUD-ONYM; hyp-ONYM, a generic name not based on a type species

## OO-

* ‘egg’
* OO-CYTE, a cell in an ovary which may undergo meiotic division to form an ovum; OO-CYST, a cyst containing a zygote formed by a parasitic protozoan such as the malaria parasite

## PACHY-

* ‘thick’
* PACHY-DERM, a very large mammal with thick skin; PACHY-ACR-ia, condition marked by clubbing fingers and toes; PACHY-CLAD-ous, thick-branched; PACHY-SANDR-a, an evergreen creeping shrubby plant of the box family

## PEN-

* ‘deficiency’, ‘want’
* PEN-ury, extreme poverty; GLYCO-PEN-ia, tendency towards hypoglycaemia

## PHLEB-

* ‘vein’
* PHLEB-itis, inflammation of the walls of a vein; phlebotomy; METRO-PHLEB-itis, inflammation of the veins of the uterus; PHLEBO-tomy, the surgical opening or puncture of a vein in order to withdraw blood, to introduce a fluid, or (historically) when letting blood

## PHYC-

* ‘seaweed’, ‘algae’
* PHYCO-LOG-y, the branch of botany concerned with seaweeds and other algae; CHLORO-PHYC-eae, algae having clear, green colour; DREPANO-PHYC-us, genus of fossil plans

## PTO-

* ‘to fall’
* PTO-sis, drooping of the upper eyelid; pro-PTO-sis, falling downward, prolapse (e.g. abnormal protrusion of the eyeball); PTO-ma-ine, an amino compound which results from decomposition of protein or dead animal matter by micro-organisms

## SALPING-

* ‘tube’; specifically relating to the fallopian tubes (orig. ‘trumpet’)
* SALPING-ectomy, surgical removal of the fallopian tubes; SALPINGO-CYE-sis, tubal pregnancy

## SAUR-

* ‘lizard’
* DINO-SAUR; SAURO-POD, a dinosaur with massive limbs; BRANCHIO-SAUR, small, prehistoric amphibian, similar to a salamander; SAUR-ian, like a lizard; SAURO-GNATH-us, with saurian arrangement of jaw bones

## XANTH-

* ‘yellow’
* XANTH-ic, yellowish; XANTH-OP-sia, visual disturbance in which objects look yellow; XANTHO-CHROM-ia, a yellowish discolouration of the skin

# Greek Verb-Forming Suffixes

## What is a verb-forming suffix?

* These suffixes form verbs when they are added to the end of a word.
* There are two of them, and only one is really Greek.

## -ize

* ‘to make’, ‘to treat’, ‘to do something with’
* CARBON-, ‘coal’ + -ize = carbonize
* syn- + CHRON-, ‘time’ + -ize = synchronize
* ant(i) + AGON-, ‘to struggle’ + -ize = antagonize

## -ate

* ‘to make’, ‘to treat’, ‘to do something with’
* GYR-, ‘circle’ + -ate = gyrate
* AER-, ‘air’ + -ate = aerate
* de- + HYDR- + -ate = dehydrate

## ‘Advertise’, not ‘advertize’

* In the United Kingdom, words that end in -ize in Canada [are often spelled -ise](http://www.oxforddictionaries.com/words/ize-ise-or-yse) (e.g. *organise* rather than *organize*).
* Some verbs, however, must always be spelled -ise, because they are not using the -ize suffix, but are writing -ise as part of a longer word element. For example:
  + -cise (meaning ‘cutting’) in the word *excise*;
  + -prise (meaning ‘taking’) as in *surprise*;
  + –mise (meaning ‘sending’) as in *promise*.
* Common words that must end in *-ise* include:
  + advertise
  + advise
  + arise
  + chastise
  + compromise
  + devise
  + disguise
  + enterprise
  + exercise
  + improvise
  + incise
  + promise
  + revise
  + supervise
  + surmise
  + surprise

## Verbs in -yse

* There are also a few verbs that always end in -yse in British English, and can also be spelled -yze in Canadian English (both are correct).
* These words do not come directly from Greek, but were created (mostly in the nineteenth century) on the basis of *analyse*, which seems to have been a back-formation from *analysis*:
  + breathalyse
  + catalyse
  + dialyse
  + electrolyse
  + hydrolyse
  + paralyse
  + psychoanalyse

# Greek Reading Practice

## ὕπέρ

* huper (above, super-): hyperactive, hyperbole

## βακτήριον

* bactērion (staff, cane)

## ἄσθμα

* asthma

## δέλτα

* delta

## γένεσις

* genesis (birth): gene, genetic

## ζῷον

* zōon (animal): zoology

## ἀναχρονισμός

* anakhronismos (wrong time reference): anachronism

## ἀπολογία

* apologia (apology): apo, ‘away’ + -logia, denoting a subject of study or interest (e.g. psychology)

## τρόπαιον

* tropaion (monument of an enemy’s defeat): trophy

## φοβία

* phobia (irrational fear, fear)

## θρόνος

* thronos (an elevated seat): throne

## μέθοδος

* methodos (following after, pursuit, method, system): method, methodical, Methodist

## τἣλε

* tēle (afar, far off): telegram, telephone, television

## θέσις

* thesis (placing, a proposition)

## κόσμος

* kosmos (order, the universe, ornament): cosmetic, cosmology, cosmic, cosmopolitan

## Ἀκαδημία

* Akadēmia (gymnasium near Athens where Plato and his successors taught, school of philosophy founded by Plato)

## βλάσφημος

* blasphēmos (evil-speaking): blaspheme

## ἀσθένεια

* astheneia (weakness): asthenia

## βάρβαρος

* barbaros (stranger): barbarian

## σύμβολον

* sumbolon (symbol): symbolic, symbolism

## ἀνταρκτικός

* antarktikos (Antarctic)

## νίκη

* nikē (victory)

# Roots, Part II

## -AGRA

* ‘painful seizure’
* ARTH-AGRA, muscular pain in the joints; MEL-AGRA, muscular pain in the limbs

## BRACHI-

* ‘arm’
* BRACHI-al, relating to the arm; MACRO-BRACH-ia, excessive development of the arms; MONO-BRACHI-us, an individual congenitally lacking one arm; BRACHIO-SAUR-us, a dinosaur with forelegs much longer than the hind legs

## CENTE-

* ‘to puncture’, ‘to prick’
* ENTERO-CENTE-sis, surgical puncture of the intestine; PNEUMONO-CENTE-sis, surgical puncturing of a lung; *centre* is also from this root (via *kentron*, ‘sharp point, stationary point of a pair of compasses’)

## CHIR-, CHEIR

* ‘hand’
* CHIRO-PRACT-ic; CHIRO-GRAPHY, handwriting; MEGALO-CHIR-ous, large-handed; POLY-CHEIR-ia state of having a supernumerary hand

## Surgeon

* This word comes from CHEIR- + ERG- ‘work’, but from French surgien, meaning that the roots are hard to recognize.
* [Celsus, *De medicina* 7.4](http://penelope.uchicago.edu/Thayer/E/Roman/Texts/Celsus/7*.html):

Now a surgeon should be youthful or at any rate nearer youth than age; with a strong and steady hand which never trembles, and ready to use the left hand as well as the right; with vision sharp and clear, and spirit undaunted; filled with pity, so that he wishes to cure his patient, yet is not moved by his cries, to go too fast, or cut less than is necessary; but he does everything just as if the cries of pain cause him no emotion.

## COEL(I)-, (CEL-), -COEL

* ‘cavity’, ‘abdominal cavity’, ‘belly’
* COELI-ac, relating to the abdomen; COELIO-tomy, opening of the abdominal cavity; ENCEPHALO-COEL, cavity within the brain, cerebral ventricle (cf. encephalocele, a hernia of the brain)

## DENDR-

* ‘tree’
* RHODO-DENDR-on (RHODO-, rose-coloured); DENDR-ite or DENDR-on, a short branched extension of a nerve cell

## HYAL-

* ‘glass’, ‘vitreous body of the eye’
* HYAL-in, a clear substance produced especially by the degeneration of epithelial or connective tissues; HYAL-oid, glassy or transparent (e.g. hyaloid membrane); HYLALO-MERE, clear, homogeneous part of the blood

## LARYNG-

* ‘larynx’
* LARYNG-itis, inflammation of the larynx; LARYNGE-al, relating to the larynx; LARYNGO-logy, the branch of medicine that deals with the larynx and its diseases; LARYNGO-tomy, surgical incision into the larynx

## LEI-

* ‘smooth’
* LEIO-DERM-ia, condition of abnormal smoothness and glossiness of skin; LEIO-THRIX, an Asian bird of the babbler family

## MALAC-

* ‘soft’
* MALACO-logy, study of molluscs; MALACO-PHIL-ous, adapted to pollination by snails

## MASTIG-

* ‘whip’, ‘flagellum’
* MASTIG-ium, defensive posterior lash of certain larvae; HETERO-MASTIG-ate, having two different types of flagella (a *flagellum* is a slender thread-like structure, especially a microscopic whip-like appendage which enables many protozoa, bacteria, spermatozoa, etc. to swim)

## MIS-

* ‘hate’
* MIS-ANTHROP-y, a dislike of humankind; MISO-GYN-ist, a person who hates women; MISO-GAM-y, the hatred of marriage

## PTER-, PTERYG-

* ‘wing’
* HELICO-PTER; PTERO-DACTYL; an-ISO-PTER-ous, unequally winged, applies to seeds; HYALO-PTER-ous, having transparent wings

## SCHIZ-, SCHIS(T)-

* ‘to split’
* SCHIZO-PHREN-ia, lit. having a split mind; ana-SCHIS-tic, applied to a type of tetrads which divides twice longitudinally in meiosis; SCHISTO-GLOSS-ia, condition of having a cleft tongue

## SPLANCHN-

* ‘entrails’, ‘viscera’
* SPLANCHN-ic, relating to the viscera or internal organs, especially those of the abdomen; SPLANCHNO-dia-STA-sis, displacement or separation of the viscera; SPLANCHNO-PLEURE, a layer of tissue in a vertebrate embryo comprising the endoderm and the inner layer of mesoderm (cf. somatopleure; *pleura*, ‘side’)

## THI-

* ‘sulphur’
* THIO-BACTER-ia, bacteria which grow where decaying organic matter releases hydrogen sulphide; THIO-GEN-ic, applies to sulphur-producing bacteria

## THORAC-

* ‘chest’, ‘thorax’
* THORAC-ic, relating to the thorax; THORACO-tomy, surgical incision into the chest wall; HEMO-THORAX, accumulation of blood in the pleural cavity; THORACO-MEL-us, parasitic limb attached to the thorax of a host

## TOX-

* ‘poison’
* TOX-ico-DERMAT-itis, skin inflammation due to poison; TOX-ico-DENDR-on, genus of plants including poison ivy and oak; TOX-ico-GNATH, poison fangs of the centipede

## TRICH-, (THRIX-)

* ‘hair’; ‘be hairy’
* TRICH-iasis, ingrowth or introversion of the eyelashes; amphi-TRICH-ous, with flagellum at each pole; SCHIZO-TRICH-ia, splitting of the hair; TRICHO-logy, the branch of medical and cosmetic study and practice concerned with the hair and scalp

## XER-

* ‘dry’
* XER-ic, containing little moisture; XERO-PHYTE, a plant which needs very little water; XERO-PHOB-ous, having little capacity to resist drought; XERO-THERM, a plant which survives drought and heat

# [Soutis (2006)](http://dx.doi.org/10.1016/j.jpedsurg.2006.03.011)

## Thorax

* The sort of description you should aim for in your final paper:

In ancient Greece, *thorax* was the armor, the metallic or skin covering for the protection of the chest and the back of the warriors. Hippocrates was the first one who used the term *thorax* to describe the anatomical area protected by this armour. Since then, the word thorax is being used unaltered in medical terminology. Derivatives of this term are many words, such as thoracic, thoracotomy (thorax and -tomy), thoracopagus (thorax and -pagus [‘fixed’]), thoracoscopy (thorax and -scopy), or in complex words, such as pneumothorax (pneuma [‘the air’] and thorax) …

# Greek Plurals

## How are Greek plurals formed?

* Many English words that are derived from Greek still retain their Greek plural forms (as do many words derived from Latin).
* Often, you can predict them based on a few simple rules. Sometimes, however you cannot: for example, ‘octopus’ can give the plural ‘octopodes’! (‘Octopuses’ is, however, now more common. ‘Octopi’, which would follow the rules for some Latin plurals, is incorrect.)

## singular *-ma*, plural *-mata*

* *one* exanthema, *many* exanthemata
* carcinoma, *pl.* carcinomata
* trauma, *pl.* traumata
* Both ‘carcinomas’ and ‘traumas’ are, however, acceptable English plurals.

## singular *-sis*, plural *-ses*

* analysis, *pl.* analyses
* synthesis, *pl.* syntheses
* diagnosis, *pl.* diagnoses

## singular *-on*, plural *-a*

* phenomenon, *pl.* phenomena
* criterion, *pl.* criteria
* protozoon, *pl.* protozoa

## singular *-itis*, plural *-itides*

* meningitis, *pl.* meningitides
* arthritis, *pl.* arthritides
* Only found in technical usage.

## singular *-x*, plural *-ces* (*when preceded by a vowel*)

* thorax, *pl.* thoraces (*or* thoraxes)
* helix, *pl.* helices

# Roots, Part III

## ALL-

* ‘other’, ‘different’
* ALLE-GOR-y, a story, poem, or picture which can be interpreted to reveal a hidden meaning, typically a moral or political one; ALLO-plasty, a plastic operation in which material outside the human body is used; ALLO-PATR-ic, animals or plans occurring in separate non-overlapping geographical areas

## ANKYL-

* ‘bent’, ‘stiff’, ‘adhesion of parts’
* ANKYLO-CHEIL-ia, adhesion of the lips; ANKYL-osis, abnormal stiffening and immobility of a joint due to fusion of the bones; ANKYLO-SAUR, a heavily built dinosaur

## CYCL-

* ‘circle’, ‘wheel’
* BI-CYCLE; en-CYCLO-PED-ia; a-CYCL-ia, state of arrested circulation of bodily fluids; CYCLO-COEL-ic, with intestines coiled in one or more distinct spirals

## ER-, EROT-

* ‘love’, ‘sexual love’
* AUTO-EROT-ic, relating to sexual excitement generated by stimulating or fantasizing about one’s own body; ALLO-EROT-ism, sexual excitement induced by and directed toward another

## GENY-; GENI-

* ‘jaw’, ‘cheek’; ‘chin’
* GENY-plasty, surgical reconstruction of the jaw; GENIO-GLOSS-us, muscle of the tongue arising from the mandible

## HOL-

* ‘whole’, ‘entire’
* CAT-HOL-ic (in respect of the whole); HOLO-CAUST (burning of the whole); HOLO-GASTRO-SCHIS-is, fissure involving the whole length of the abdomen

## HOM-, HOME-

* ‘same’, ‘similar’
* HOMO-CHROM-ous, of one colour; HOMO-PHONE, pronounced alike but different in meaning or derivation or spelling; HOMO-PTER-ous, having wings alike

## HYPN-

* ‘sleep’
* HYPN-AGOG-ic, inducing sleep, pertaining to inception of sleep, applies to visions seen just before complete sleep

## IDE-

* ‘idea’, ‘mental image’
* MONO-IDE-ism, absorption in a single idea, as in mental depression, hypnosis or trance; IDEO-phobia, morbid fear of ideas

## LEUK-, (LEUC-)

* ‘white’
* LEUK-AEM-ia; LEUKO-CYTE, a colourless cell which circulates in the blood; LEUKO-ENCEPHAL-itis, inflammation of the white substance of the brain

## ONT-

* ‘being’, ‘individual’
* ONTO-logy, the branch of metaphysics dealing with the nature of being; SCHIZ-ONT, a cell that divides by schizogony to form daughter cells (in biology, *-ont* denotes an individual or cell of a specified type)

## PHYL-

* ‘race’
* PHYL-um, (in zoology) a principal taxonomic category that ranks above class and below kingdom; POLY-PHYL-etic, a group of organisms derived from more than one common evolutionary ancestor or ancestral group and therefore not suitable for placing in the same taxon

## PYEL-

* ‘pelvis (especially of the kidney)’
* CYSTO-PYEL-itis, inflammation of the urinary bladder and pelvis of the kidney; PYELO-stomy, incision of the renal pelvis; PYELO-GRAPH-y, an X-ray technique for producing an image of the renal pelvis and urinary tract

## PYG-

* ‘rump’
* PYG-id-ium, the terminal part or hind segment of the body in certain invertebrates; PYGO-POD-ous, having feet set far back, as some birds

## STEAR-, STEAT-

* ‘fat’, ‘tallow’
* STEAT-itis, inflammation of adipose tissue; STEAT-oma, a sebaceous cyst or tumour of a sebaceous gland; STEAR-in, a white crystalline substance which is the main constituent of tallow and suet

## STREPT-, STROPH-

* ‘turned’, ‘twisted’
* PHLEBO-STREP-sis, the twisting of a vein; STREPTO-COCC-us, a bacterium of a genus that includes the agents of souring of milk and dental decay, and haemolytic pathogens causing various infections such as scarlet fever and pneumonia

## THALL-

* ‘young shoot’
* THALLO-PHYTE, plant not differentiated into stem and root, such as algae, fungi and lichens; THALL-us (*pl.* thalli), a plant body that is not differentiated into stem and leaves and lacks true roots and a vascular system (i.e. algae, fungi, lichens, and some liverworts)

## THYM-

* ‘mind’, ‘emotions’
* eu-THYM-ia, a joyful but tranquil mood; hyper-THYM-ia, heightened emotional response; hypo-THYM-ia, subnormal emotional response and depression

## TRIB-, TRIP-

* ‘to rub’, ‘to crush’
* OMPHALO-TRIP-sy, separation of the umbilical cord by a crushing instrument; XERO-TRIP-sis, dry friction

## ZYG-

* ‘yoke’; relating to joining or pairing
* ZYG-ODONT, having molar teeth in which the four tubercles are united in pairs; ZYG-ote, cell formed by the union of two gametes or reproductive cells (a fertilized ovum)

# Counting in Greek

## HEMI-

* ‘half’
* HEMI-SPHERE, a half of a sphere; HEMI-BRANCH, a gill having filaments on one side only, a half-gill; HEMI-NEPHR-ectomy, removal of part of a kidney; HEMI-an-OP-ia or HEMI-an-OP-sia, blindness over half the field of vision; HEMI-ALG-ia, pain affecting one half of the body.

## MON-

* ‘single’, ‘one’
* MON-ARCH; MONO-GRAPH, a detailed written study of a single specialized subject or an aspect of it; MONO-CARP-ic, a plant flowering only once and then dying; MONO-TRICH-ous, having only one flagellum at one pole (opp. amphi-TRICH-ous)

## PROT-

* ‘first’, ‘original’, ‘primitive’
* PROTO-CEPHAL-on, first of six segments composing an insect’s head; PROTO-PHYTE, any plant of the lowest and most primitive type; PROTO-ZO-an, a unicellular or noncellular animal organism

## DI-

* ‘twice’, ‘double’
* DI-LEM-ma, a situation in which a difficult choice has to be made between two or more alternatives; DI-PLO-ma (‘folded paper’); DI-ARTHR-osis, a freely movable articulation; DI-oecious, having sexes separate, usually refers to plants which have male and female flowers on different individuals

## DICH-

* ‘in two’
* DICHO-tomy, a division or contrast between two things (in botany, repeated branching into two equal parts); DICH-OP-tic, having the borders of the compound eyes separate, or having the eyes wide apart (of an insect)

## DEUT-, DEUTER-

* ‘second’
* DEUTER-AGON-ist, the person second in importance to the protagonist in a drama; DEUTERO-NOM-y (‘second law’); DEUTERO-GENE-sis, second phase of embryonic development

## TRI-

* ‘three’
* TRI-POD; TRI-CYCLE; TRI-CHROMAT-ic, able to perceive the three primary colours; TRI-DACTYL, having three digits; TRI-COCC-us, a three-carpel fruit

## TETR(A)-

* ‘four’
* TETRA-MET-er; TETRA-CHEIR-ous, having four hands; TETRA-CYCL-ic, with four whorls

## PENT(A)-

* ‘five’
* PENTA-GON; PENTA-MET-er; PENTA-DACTYL, having all four limbs normally terminating in five digits

## HEXA-

* ‘six’
* HEXA-GON-al; HEXA-MET-er; HEXA-GYN-ous, having six pistils; HEXA-hedron, a POLY-hedron having six faces; HEX-ose, any monosaccharide containing six carbon atoms

## HEPT(A)-

* ‘seven’
* HEPTA-GYN-ous, having seven pistils; HEPTA-HYDR-ate, a compound with seven molecules of water

## OCT(A)-

* ‘eight’
* OCTO-PUS; OCT-ODONT, having eight teeth; OCT-OPTHALM-us, having eight eyes

## ENNE(A)-

* ‘nine’
* ENNE-ad, a group of nine; ENNEA-GON, a nine-sided polyhedron; ENNE-ANDR-ous, having nine stamens

## DEC(A)-

* ‘ten’
* DECA-LOGUE, the Ten Commandments; DECA-HYDR-ate, compound with ten molecules of water; DECA-hedron, a ten-sided polyhedron; DECA-POD, having ten legs

## HECT-

* ‘hundred’
* HECT-ARE, one hundred ares (10,000 square metres); HECTO-GRAM, one hundred grams

## KILO-

* ‘one thousand’
* KILO-CALOR-ie, one thousand calories (equal to one large calorie); KILO-GRAM, one thousand grams